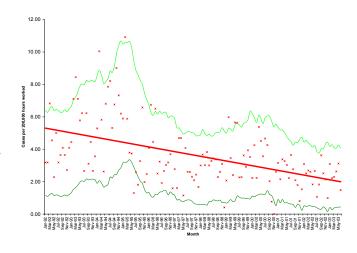
# **Berkeley Lab Accident Statistics**

# As Of July 14, 2003

Note that there are several different time frames for which injury data are presented: calendar year, fiscal year, and selfassessment performance year.

<u>Calendar year</u> data are most commonly used to compare accident rates in the US. The calendar year is used by the Bureau of Labor Statistics for national rates, and almost every organization that engages in benchmarking will use annual data. Most of the data published by DOE also use the calendar year.

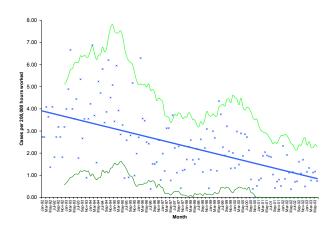


<u>Fiscal year</u> (October – September) data are used by DOE to measure Berkeley Lab performance under Appendix F, and to measure all contractors' quality of ISM implementation.

<u>Self-assessment year</u> (July – June) data are perhaps the most important for internal use at the Berkeley Lab, since all division performance is assessed on that basis.

#### Other

Accident statistics are also displayed as moving averages, showing monthly rates and 12 months moving averages. In particular when combined with confidence limits, these graphs give the earliest indications of improving or deteriorating trends.



Most recently, the Office of Science is also beginning to measure injury frequency rates on a quarterly basis, with a 5-year linear trend line. This gives a fair indication of improving or deteriorating performance in recent years.

Compiled By Matt Kotowski

## **External Performance Measures**

External performance measures are the Appendix F accident prevention measure and two of the five criteria DOE uses to determine the quality of ISM implementation. These measures are tracked on a fiscal year basis.

#### Appendix F

The graph on p. 3 shows current performance under the Appendix F accident prevention measure, as well as performance in prior fiscal years. Note that this is a 5-year measure, which will be completed at the end of September 2003.

The graphs on pp. 4 and 5 show the cumulative performance for the current fiscal year, compared to goals and the previous year's performance.

#### <u>ISM Implementation – Cost Index</u>

DOE compares the Berkeley Lab site-wide cost index to evaluate how well the Berkeley Lab has succeeded in implementing Integrated Safety Management. This is shown at the very right side of the graph on p. 6, right next to the most recent available DOE complex-wide cost index value. The graph also shows how the divisions and the different components contribute to the LBNL performance.

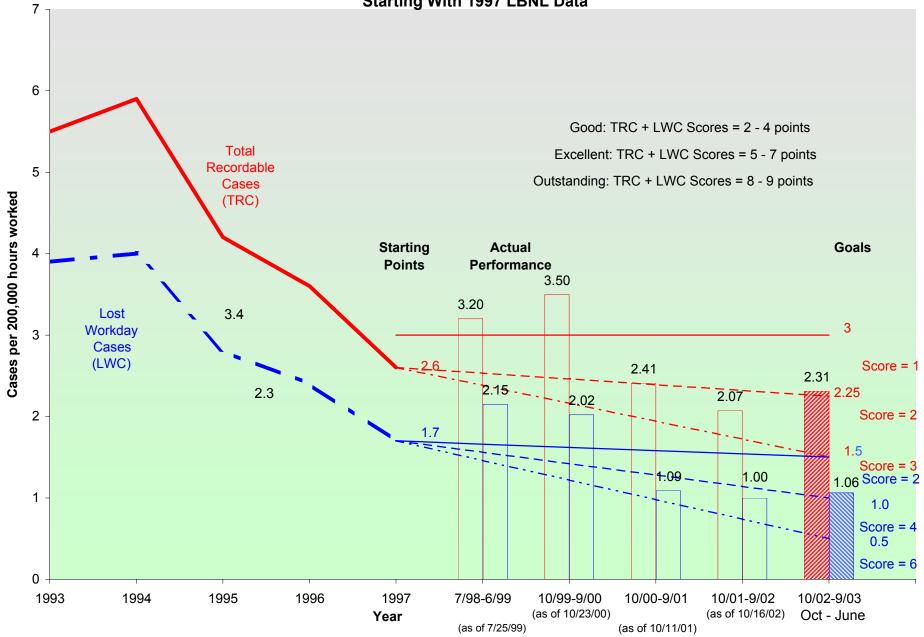
#### ISM Implementation – Total Recordable Case Rate

Site-wide performance under this measure is shown in the graph on p. 7, compared to the most recent DOE complex-wide value. Division performance is also shown.

#### Office of Science

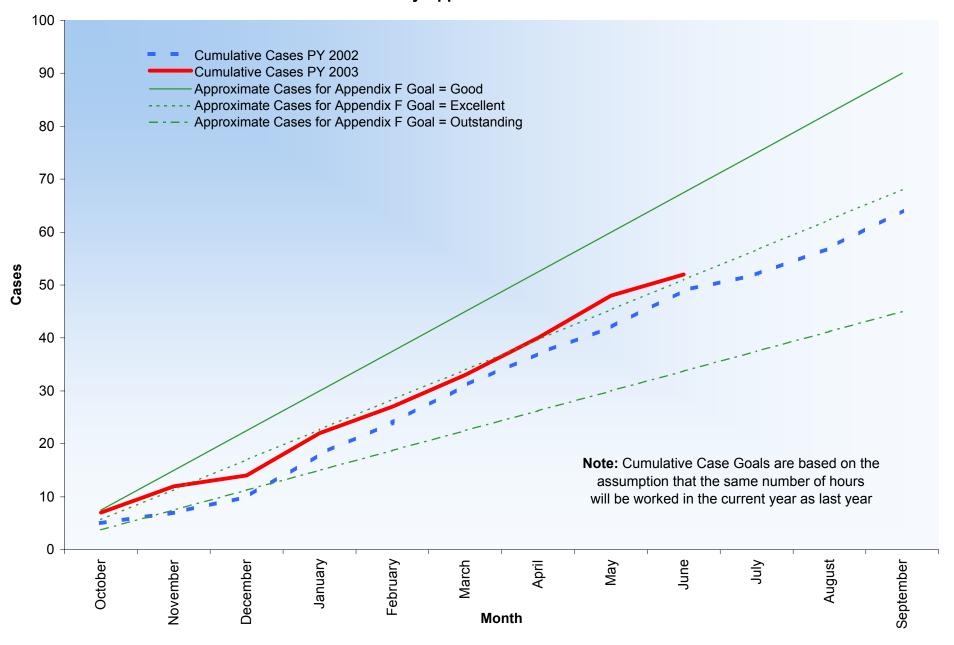
The DOE Office of Science has elected to compare performance of Office of Science Labs using quarterly frequency rates with 5-year linear trend lines. Berkeley Lab TRC rates using this technique are shown on p. 8, and DART rates are shown on p. 9. These graphs are used by the head of the Office of Science quarterly to brief the Assistant Secretary on safety performance by the Laboratories managed by the Office of Science.

Appendix F 1.3.d Performance
Based On Beating Best In Class In 5 Years
Starting With 1997 LBNL Data

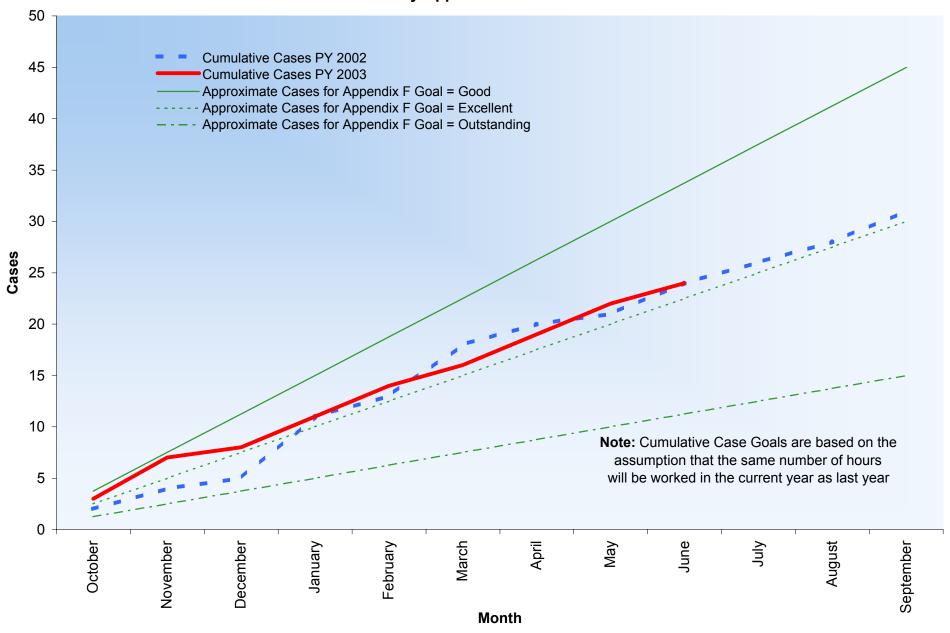


13dPY03 Oct-June comb graph MJK, 7/14/2003

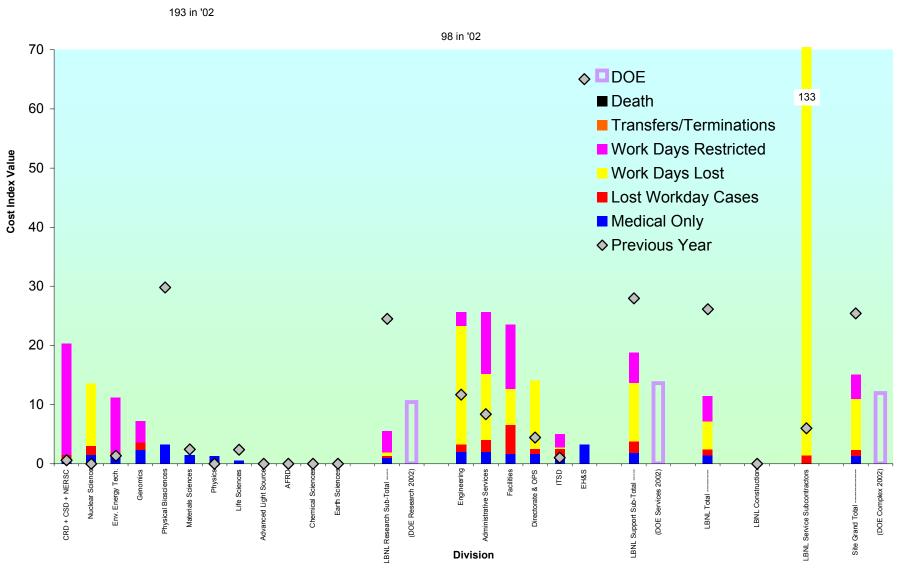
# Berkeley Lab & Contractors Cumulative Total Recordable Cases By Appendix F Year



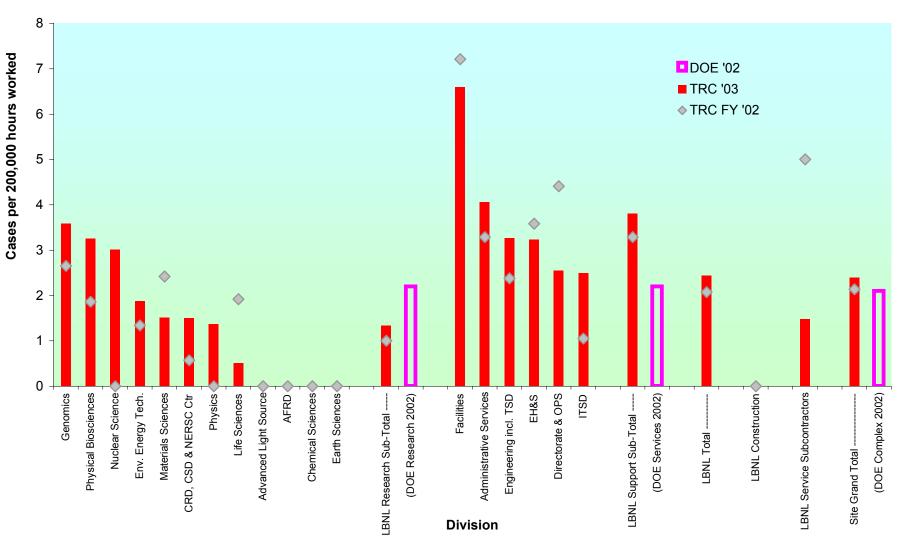
# Berkeley Lab & Contractors Cumulative DART (Days Away, Restricted, Transferred) Cases By Appendix F Year

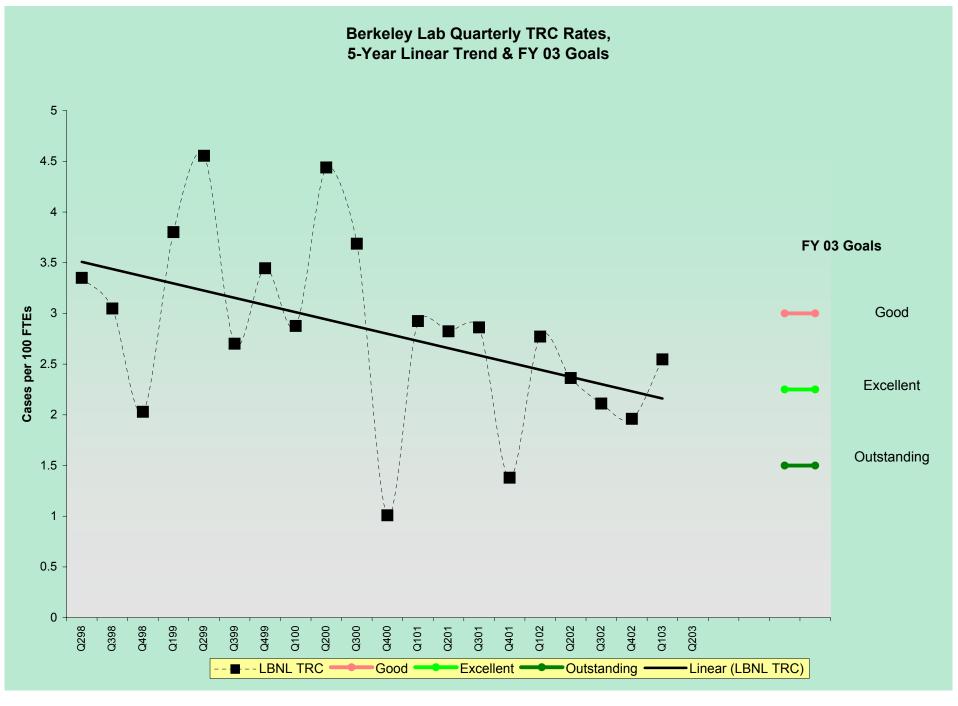


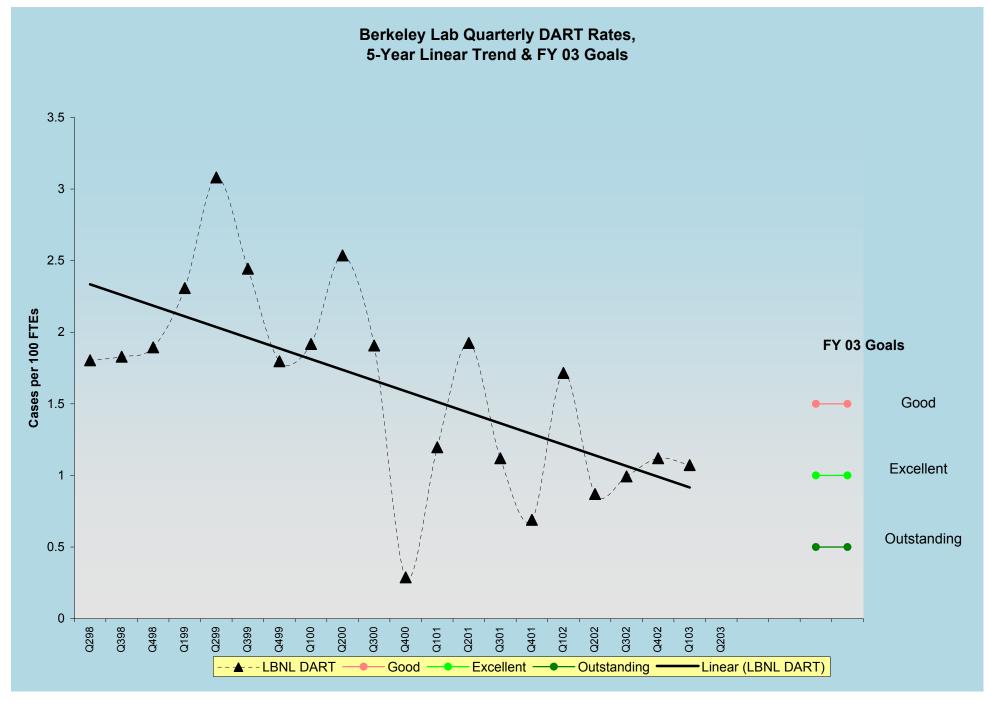
# DOE ISMS Performance Measure LBNL Cost Index 10/1/02 - 6/30/03



# DOE ISM Performance Measure LBNL Total Recordable Case Rates 10/1/02 - 6/30/03







### **Site-Wide Rates**

#### Annual Rates

The graph on p. 11 depicts Berkeley Lab TRC and DART rates, alongside corresponding rates for DOE Contractors. This graph shows the long-term trends most clearly.

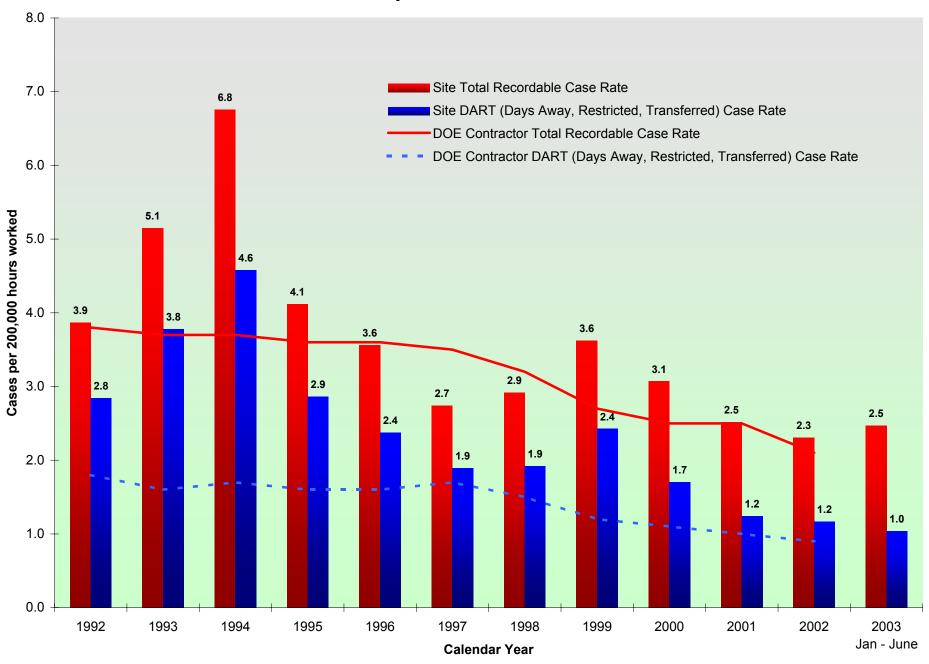
#### TRC Moving Averages with Control Limits

The graph on p. 12 depicts the TRC 12-months moving average rate in red. Control limits are shown at the 95% confidence level. Variations in the monthly rates within the control limits are expected. Variations in the monthly rates that exceed the trigger points in the interpretation rules may be statistically significant and warrant further investigation. But note that 5% of monthly rates are statistically expected to fall outside of the confidence limits.

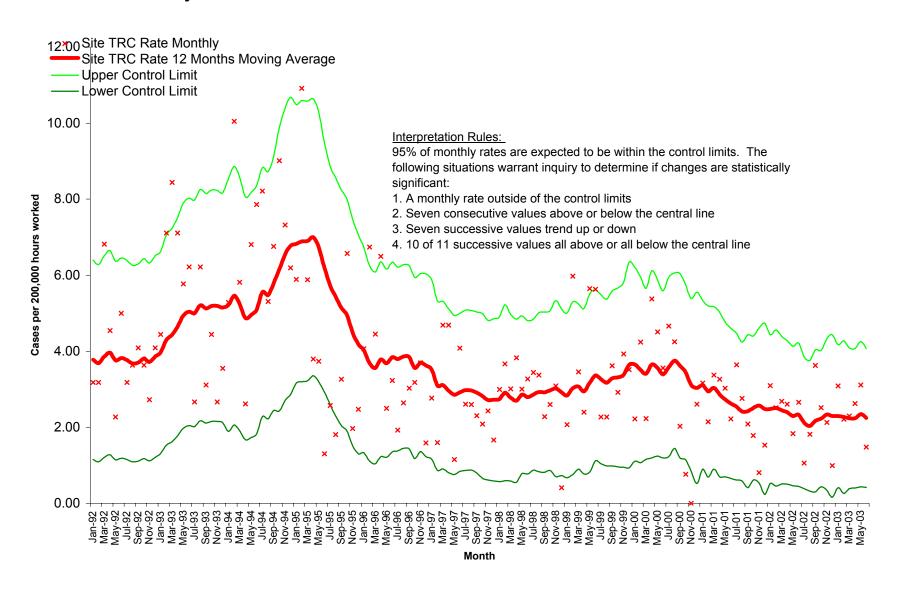
#### **DART Moving Averages with Control Limits**

The graph on p. 13 depicts the DART 12-months moving average rate in blue. Control limits are shown at the 95% confidence level. Variations in the monthly rates within the control limits are expected. Variations in the monthly rates that exceed the trigger points in the interpretation rules may be statistically significant and warrant further investigation. But note that 5% of monthly rates are statistically expected to fall outside of the confidence limits.

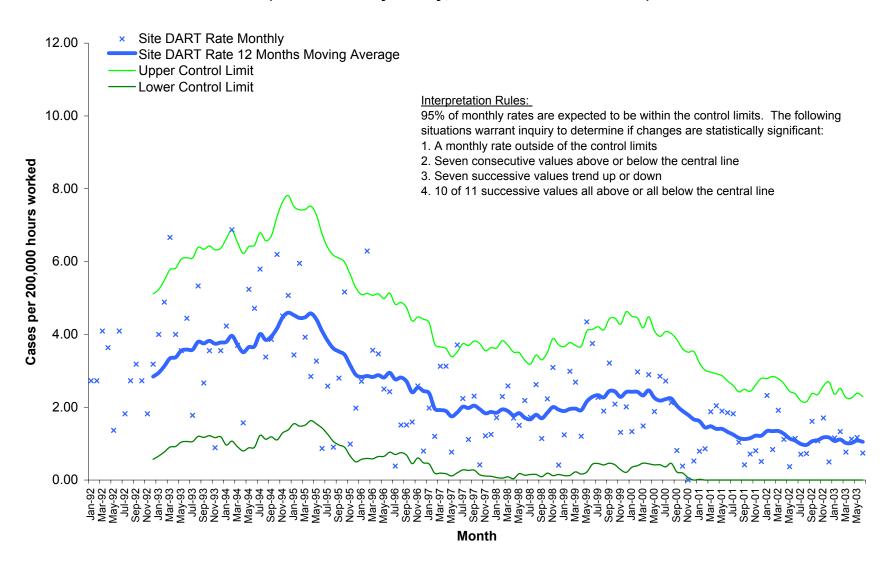
#### **Berkeley Lab Site Accident Rates**



#### Berkeley Lab Total Recordable Case Rates With Control Limits At 95% Confidence Level



# Berkeley Lab DART Rates With Control Limits At 95% Confidence Level (Cases with Days Away, Restricted or Transferred)



### **Self-Assessment**

Berkeley Lab self-assessment goals include two accident prevention measures – division performance for TRC and DART rates. In both cases, the rates are tied to the Appendix F goals, and credit is given for small numbers of accidents and (at year end) for improvement in performance.

Green = Rate below 75% of the Appendix F goal, or

Only one case, or

Improvement of 20% or more over the previous year.

Yellow = Rate between 75% and 125% of Appendix F goal, or

Only 2 cases, or

Improvement of 10% or more over the previous year.

Red = Rate above 125% of Appendix F goal, and

More than 2 cases, and

Improvement less than 10% over previous year.

#### TRC Performance

The graph on p. 15 shows the division performance for the self-assessment year to date, for the previous 2 self-assessment years. Goal Levels are indicated.

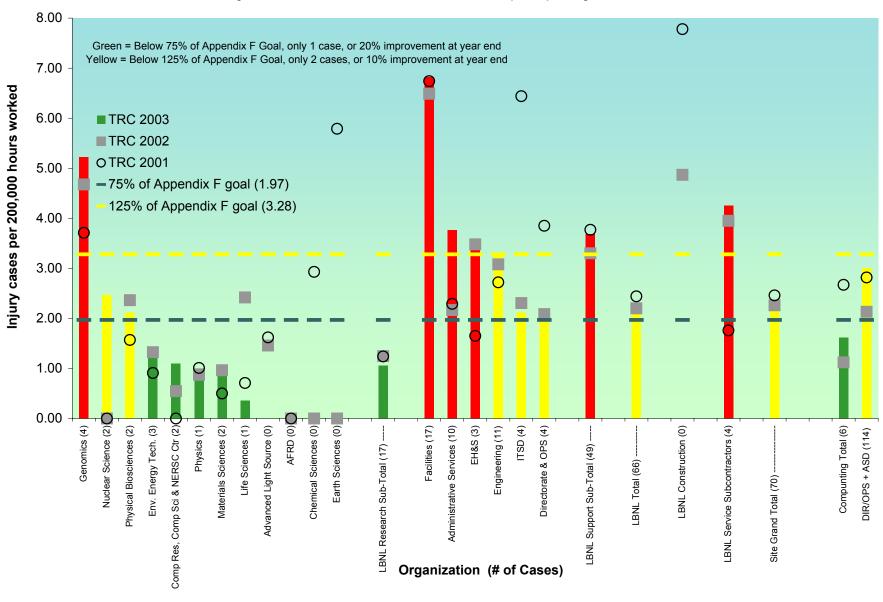
The graph on p. 16 shows the cumulative TRC performance for the current performance year, compared to goals and the previous year's performance.

#### **DART Performance**

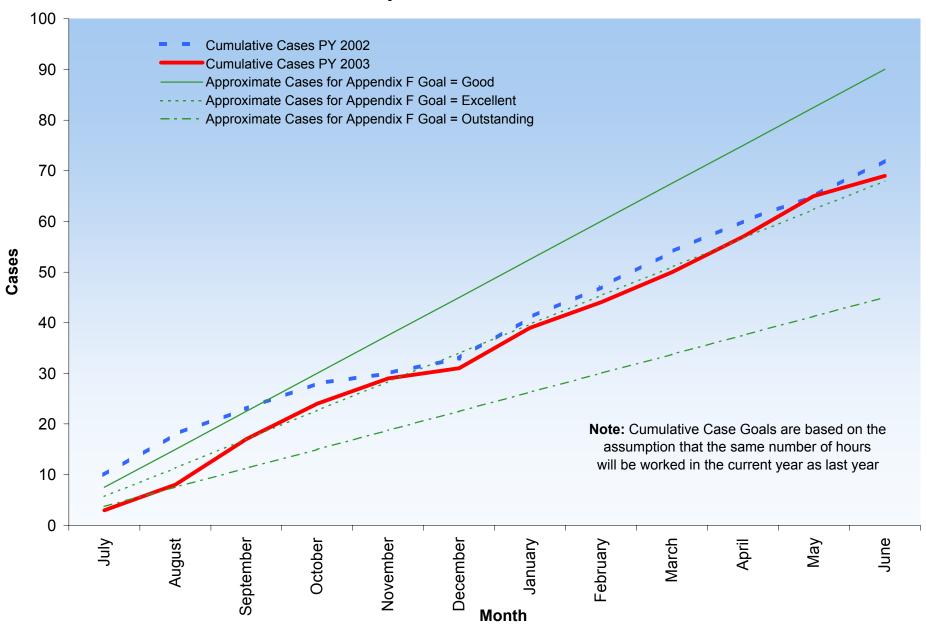
The graph on p. 17 shows the division performance for the self-assessment year to date, for the previous 2 self-assessment years. Goal Levels are indicated.

The graph on p. 18 shows the cumulative DART performance for the current performance year, compared to goals and the previous year's performance.

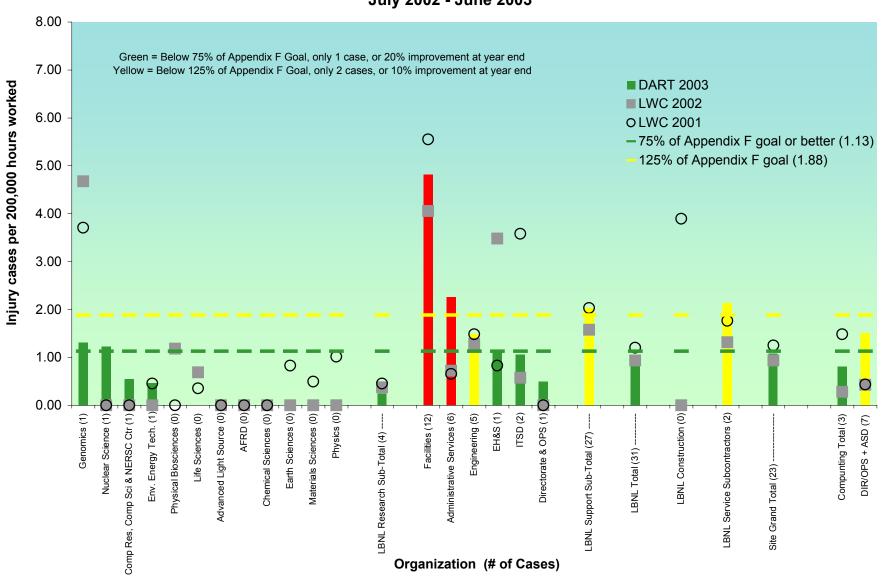
#### Berkeley Lab Total Recordable Case Rates (TRC), July 2002 - June 2003



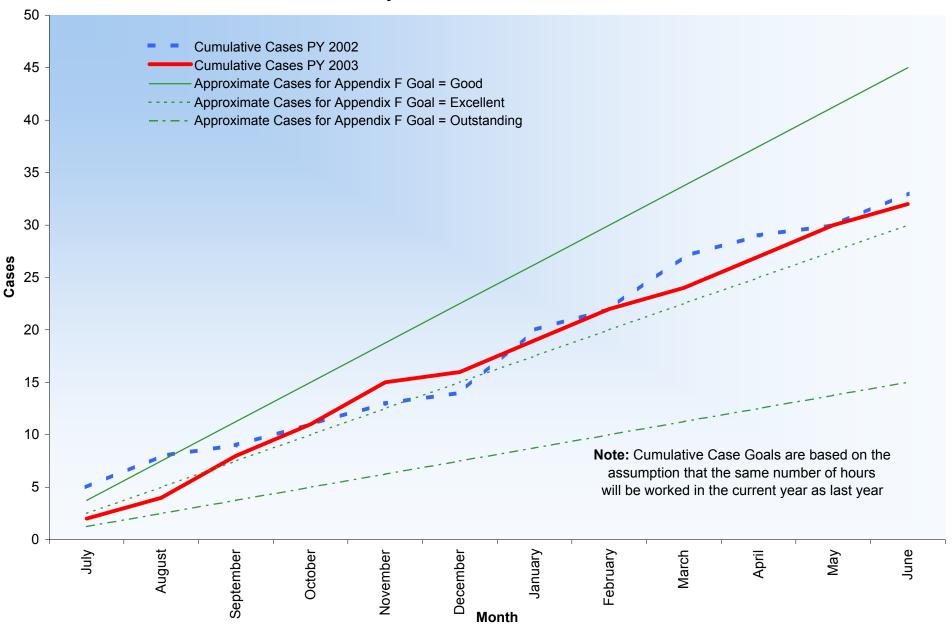
# Berkeley Lab & Contractors Cumulative Total Recordable Cases By Self-Assessment Year



# Berkeley Lab Days Away, Restricted of Transferred Cases (DART) July 2002 - June 2003



# Berkeley Lab & Contractors Cumulative DART (Days Away, Restricted, Transferred) Cases By Self-Assessment Year



### **Matrix Tables**

The matrix tables on pp. 20 and 21 are designed to summarize division performance with respect to Self-Assessment and Appendix F goals. The injuries for the Appendix F and Self-Assessment years to date are summarized on the right hand side, and they are compared to the estimated number of cases that will result in green and yellow ratings.

Total Recordable Cases are shown on p.20, DART Cases on p. 21.

### LBNL Total Recordable Cases July 1, 2002 - September 30, 2003

				Oct-02	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03		App F Year						
	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Self-A	ssessmen	t Year	Total	Self-Assess	ment Goals	Total				
																YTD	Green *	Yellow *	YTD				
Advanced Light Source	0	0	0	0	0	0	0	0	0	0	0	0				0	1	2	0				
AFRD	0	0	0	0	0	0	0	0	0	0	0	0				0	1	2	0				
Chemical Sciences	0	0	0	0	0	0	0	0	0	0	0	0				0	1	2	0				
Comp Res, Comp Sci & NERSC Ctr	0	1	0	0	0	0	0	1	0	0	0	0				2	3	5	1				
Earth Sciences	0	0	0	0	0	0	0	0	0	0	0	0				0	2	4	0				
Environmental Energy Tech.	0	0	0	0	0	0	2	0	1	0	0	0				3	4	7	3				
Genomics	0	0	1	0	0	1	0	0	0	0	0	2				4	1	2	3				
Life Sciences	0	0	0	1	0	0	0	0	0	0	0	1				2	5	9	2				
Materials Sciences	0	0	0	1	1	0	0	0	0	0	0	0				2	4	6	2				
Nuclear Science	0	0	0	0	1	0	0	0	0	0	0	1				2	1	2	2				
Physical Biosciences	0	0	0	1	0	0	0	0	0	1	0	0				2	1	2	2				
Physics	0	0	0	0	0	0	0	0	0	0	1	0				1	2	3	1				
LBNL Research Sub-Total	0	1	1	3	2	1	2	1	1	1	1	4	0	0	0	18	31	52	16				
							atatatatatatata																
Administrative Services	0	1	1	0	2	1	1	0	0	2	2	0				10	5	9	8				
Directorate/OPS	0	0	1	0	1	0	2	0	0	0	0	0				4	3	6	3				
Engineering	1	0	2	1	0	0	2	1	2	1	1	0				11	7	12	8				
Environment, Health & Safety	1	0	0	0	0	0	0	1	0	0	1	0				3	2	3	2				
Facilities	1	2	2	2	0	0	1	1	3	2	2	1				17	4	8	12				
ITS Div	0	1	0	1	0	0	0	0	0	1	1	0				4	3	6	3				
LBNL Support Sub-Total	3	4	6	4	3	1	6	3	5	4	7	1	0	0	0	49	27	45	34				
••																							
LBNL Total	3	5	7	7	5	2	8	4	6	5	8	5	0	0	0	67	59	98	50				
			· ·																				
LBNL Construction	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0	0				
	J	Ţ.	J	· ·	J	J	Ţ.	J	_	,	J	Ü				· ·	Ŭ	ŭ					
LBNL Service Subcontractors	0	0	2	0	0	0	0	1	0	0	0	0				3	1	2	1				
22.12 3011100 34000114401010	J	Ū		Ü	J	Ū	J	,	Ü	Ü	Ü	Ü						-					
Site Grand Total	3	5	9	7	5	2	8	5	6	5	8	5	0	0	0	70	60	100	51				
Prior Year Site Grand Total	10	7	5	5	2	3	7	6	7	6	5	8	3	5	7	73	00	100	64				
. nor rear one orang rotal	,,	,	J	J	_	J	,	J	,	J	J	J	J	J	,	, 5			0-7				

Notes: Projections assume that hours worked will remain constant
Final division ratings will be subject to adjustment for other criteria

Site-Wide 2003 App F Good: TRC < 3.00, no more than 92 cases
Site-Wide 2003 App F Excellent: TRC < 2.25, no more than 69 cases
Site-Wide 2003 App F Outstanding: TRC < 1.5, no more than 46 cases

\*Green: Projected maximum cases to get a TRC rate of 1.97 (75% of good & excellent avg)

\*Yellow: Projected maximum cases to get a TRC rate of 3.28 (125% of good & excellent avg)

TRC DART Matrix, TRC 03

Color Gradation Key:

#### LBNL DART (Days Away, Restricted, Transferred) Cases July 1, 2002 - September 30, 2003

				Oct-02	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03	App F Year			
	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Self-A	ssessmer	nt Year	Total	Self-Assess	ment Goals	Total
																YTD	Green *	Yellow *	YTD
Advanced Light Source	0	0	0	0	0	0	0	0	0	0	0	0				0	0	1	0
AFRD	0	0	0	0	0	0	0	0	0	0	0	0				0	0	1	0
Chemical Sciences	0	0	0	0	0	0	0	0	0	0	0	0				0	0	1	0
Comp Res, Comp Sci & NERSC Ctr	0	0	0	0	0	0	0	1	0	0	0	0				1	2	3	1
Earth Sciences	0	0	0	0	0	0	0	0	0	0	0	0				0	1	2	0
Environmental Energy Tech.	0	0	0	0	0	0	1	0	0	0	0	0				1	2	4	1
Life Sciences	0	0	0	0	0	0	0	0	0	0	0	0				0	3	5	0
Materials Sciences	0	0	0	0	0	0	0	0	0	0	0	0				0	2	3	0
Nuclear Science	0	0	0	0	1	0	0	0	0	0	0	0				1	0	1	1
Physical Biosciences	0	0	0	0	0	0	0	0	0	0	0	0				0	1	1	0
Physics	0	0	0	0	0	0	0	0	0	0	0	0				0	1	2	0
Genomics	0	0	0	0	0	0	0	0	0	0	0	1				1	0	1	1
LBNL Research Sub-Total	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	4	18	30	4
Administrative Services	0	1	1	0	2	1	0	0	0	1	0	0				6	3	5	4
Directorate/OPS	0	0	0	0	1	0	0	0	0	0	0	0				1	2	3	1
Engineering	0	0	2	0	0	0	1	0	1	0	1	0				5	4	7	3
Environment, Health & Safety	1	0	0	0	0	0	0	0	0	0	0	0				1	1	1	0
Facilities	1	1	1	2	0	0	1	1	1	2	1	1				12	2	4	9
ITS Div	0	0	0	1	0	0	0	0	0	0	1	0				2	2	3	2
LBNL Support Sub-Total	2	2	4	3	3	1	2	1	2	3	3	1	0	0	0	27	15	26	19
LBNL Total	6	2	4	3	4	1	3	2	2	3	3	2	0	0	0	31	33	56	23
											)								
LBNL Construction	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0	0
LBNL Service Subcontractors	0	0	0	0	0	0	0	1	0	0	0	0				1	0	1	1
	J	ū	ŭ	ū	ū	J	ŭ	•	ŭ	J	J	J				•	ŭ		
Site Grand Total	6	2	4	3	4	1	3	3	2	3	3	2	0	0	0	32	33	57	24
Prior Year Site Grand Total	6	3	1	2	2	1	5	3	5	2	1	3	2	2	3	34	35	58	31
	-	-	•	=	_	•	-	-	-	_	•	-	-	_	-				

Notes: Projections assume that hours worked will remain constant
Final division ratings will be subject to adjustment for other criteria

Data as of 7/7/2003

Color Gradation Key: 0

Site-Wide 2003 App F Good: LWC < 1.50, no more than 46 cases
Site-Wide 2003 App F Excellent: LWC < 1.00, no more than 30 cases
Site-Wide 2003 App F Outstanding: LWC < .05, no more than 15 cases

Projected maximum cases to get an LWC rate of 1.13 (75% of App F Goal of 1.50)

Projected maximum cases to get an LWC rate of 1.88 (125% of App F Goal of 1.50)

Green:

## **Site-Wide Ergonomics**

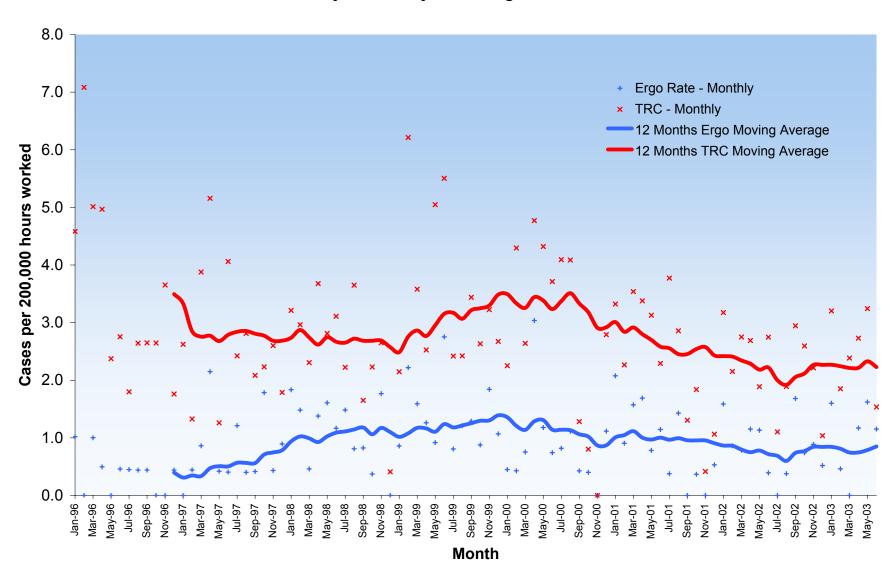
Ergonomic injuries represent about one third of all Berkeley Lab injuries.

The graph on p. 23 depicts the ergonomic injury rates as well as the total recordable case rates as 12-months moving averages.

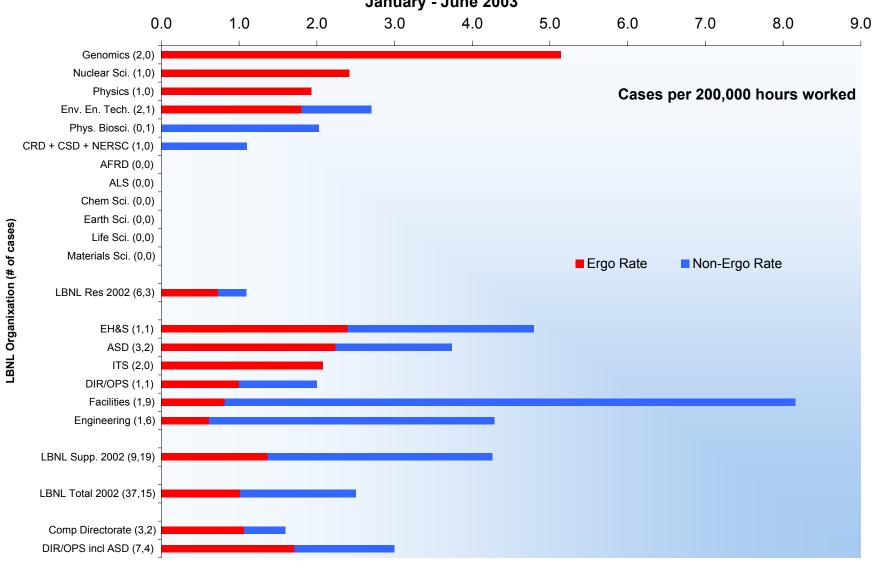
On p. 24 the breakdown of ergonomic vs. non-ergonomic injuries is shown for the divisions.

Additional information on ergonomic rates for specific divisions are available through Division EH&S Liaisons.

#### **Berkeley Laboratory TRC & Ergonomics Rates**



# Ergonomics & Non-Ergonomics Injury Frequency Rates January - June 2003



## **Directorate / OPS Summary Charts**

Since most of the injuries at the Berkeley Lab are incurred by personnel in the support functions, a few graphs are provided to allow more detailed tracking of injury rates among support organizations reporting to the Deputy Director for Operations.

A TRC Matrix Table for support organizations is shown on p. 26. It is similar to the one shown on p. 20, but also shows the values for the prior year.

A DART Matrix Table for support organizations is shown on p. 27. It is similar to the one shown on p. 21, but also shows the values for the prior year.

TRC rates for support organizations are further broken down in the graph on p. 28.

DART rates for support organizations are further broken down in the graph on p. 29.

### Benson Reports - Total Recordable Cases July 1, 2002 - September 30, 2003

				Oct-02	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03		App I	Year	
	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Self-A	Assessme	nt Year	Total	Self-Assess	ment Goals	
																YTD	Green *	Yellow *	YTD
Administrative Services	0	1	1	0	2	1	1	0	0	2	2	0				10	5	9	8
previous year	2	0	0	0	0	0	2	1	0	0	1	2	0	1	1	8			8
Directorate/OPS	0	0	1	0	1	0	2	0	0	0	0	0				4	3	6	3
previous year	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	4			3
Engineering	1	0	2	1	0	0	2	1	2	1	1	0				11	7	12	8
previous year	2	3	1	1	0	0	0	2	2	1	1	0	1	0	1	13			9
Environment, Health & Safety	1	0	0	0	0	0	0	1	0	0	1	0				3	2	3	2
previous year	1	0	0	1	1	0	1	0	0	0	0	0	1	0	0	4			4
Facilities	1	2	2	2	0	0	1	1	3	2	2	1				17	4	8	12
previous year	2	0	1	1	0	2	3	1	3	1	0	2	1	2	2	16			18
LBNL Construction	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0	0
previous year	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1			0
LBNL Service Subcontractors	0	0	2	0	0	0	0	1	0	0	0	0				3	1	2	1
previous year	0	0	1	0	1	0	0	1	0	0	0	0	0	0	2	3			4
Benson Reports	3	3	8	3	3	1	6	4	5	5	6	1				48	22	40	34
previous year	7	4	4	4	2	2	6	5	5	3	2	5	3	3	6	49	]		46

Color Gradation Key: 0 1 2 3 4 5 6 7 8+

\*Green: Projected maximum cases to get a TRC rate of 1.97 (75% of good & excellent avg)

\*Yellow: Projected maximum cases to get a TRC rate of 3.28 (125% of good & excellent avg)

Data as of 7/7/2003

Notes: Projections assume that hours worked will remain constant
Final division ratings will be subject to adjustment for other criteria

Site-Wide 2003 App F Good: TRC < 3.00, no more than 92 cases
Site-Wide 2003 App F Excellent: TRC < 2.25, no more than 69 cases
Site-Wide 2003 App F Outstanding: TRC < 1.5, no more than 46 cases

TRC DART Matrix, TRC 03 Benson

MJK, 7/14/2003

### Benson Reports - DART (Days Away, Restricted, Transferred) Cases July 1, 2002 - September 30, 2003

				Oct-02	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03		App F	Year	
	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Self-A	ssessme	nt Year	Total	Self-Assessr	ment Goals	Total
																YTD	Green *	Yellow *	YTD
Administrative Services	0	1	1	0	2	1	0	0	0	1	0	0				6	3	5	4
previous year	1	0	0	0	0	0	0	0	0	0	0	2	0	1	1	4			5
Directorate/OPS	0	0	0	0	1	0	0	0	0	0	0	0				1	2	3	1
previous year	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Engineering	0	0	2	0	0	0	1	0	1	0	1	0				5	4	7	3
previous year	1	2	0	0	0	0	0	1	1	1	0	0	0	0	1	6			4
Environment, Health & Safety	1	0	0	0	0	0	0	0	0	0	0	0				1	1	1	0
previous year	1	0	0	1	1	0	1	0	0	0	0	0	1	0	0	4			4
Facilities	1	1	1	2	0	0	1	1	1	2	1	1				12	2	4	9
previous year	1	0	1	0	0	1	3	0	3	1	0	1	1	1	1	11			12
LBNL Construction	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0	0
previous year	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
LBNL Service Subcontractors	0	0	0	0	0	0	0	1	0	0	0	0				1	0	1	1
previous year	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1			1
Benson Reports	2	2	4	2	3	1	2	2	2	3	2	1				26	12	21	18
previous year	4	2	1	1	2	1	4	1	4	2	0	3	2	2	3	26	]		25

Color Gradation Key: 0 1 2 3 4 5 6 7 8+

Green: Projected maximum cases to get an LWC rate of 1.13 (75% of App F Goal of 1.50)
Yellow: Projected maximum cases to get an LWC rate of 1.88 (125% of App F Goal of 1.50)

Notes: Projections assume that hours worked will remain constant

Final division ratings will be subject to adjustment for other criteria

Data as of 7/7/2003

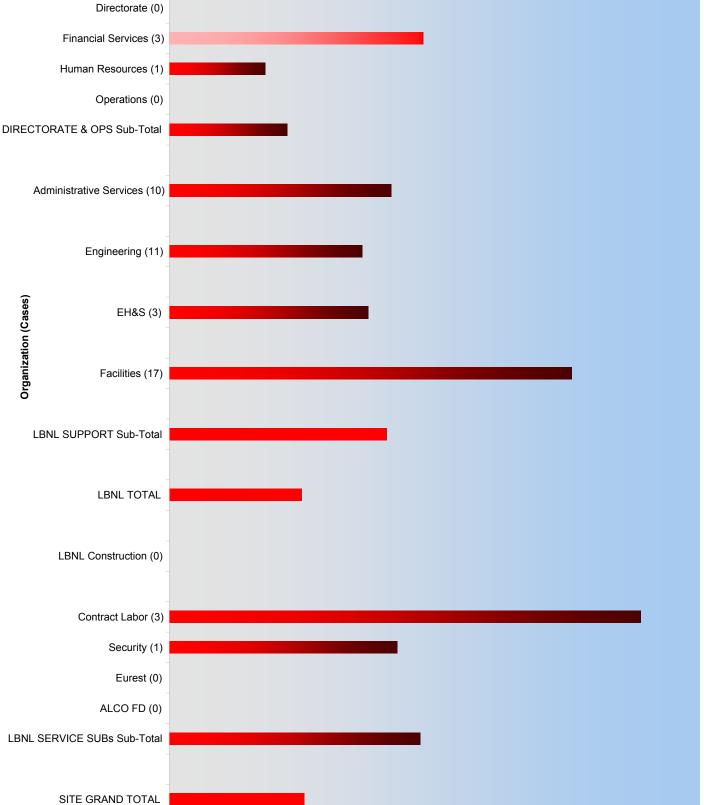
Site-Wide 2003 App F Good: LWC < 1.50, no more than 46 cases
Site-Wide 2003 App F Excellent: LWC < 1.00, no more than 30 cases
Site-Wide 2003 App F Outstanding: LWC < .05, no more than 15 cases

TRC DART Matrix, DART 03 Benson

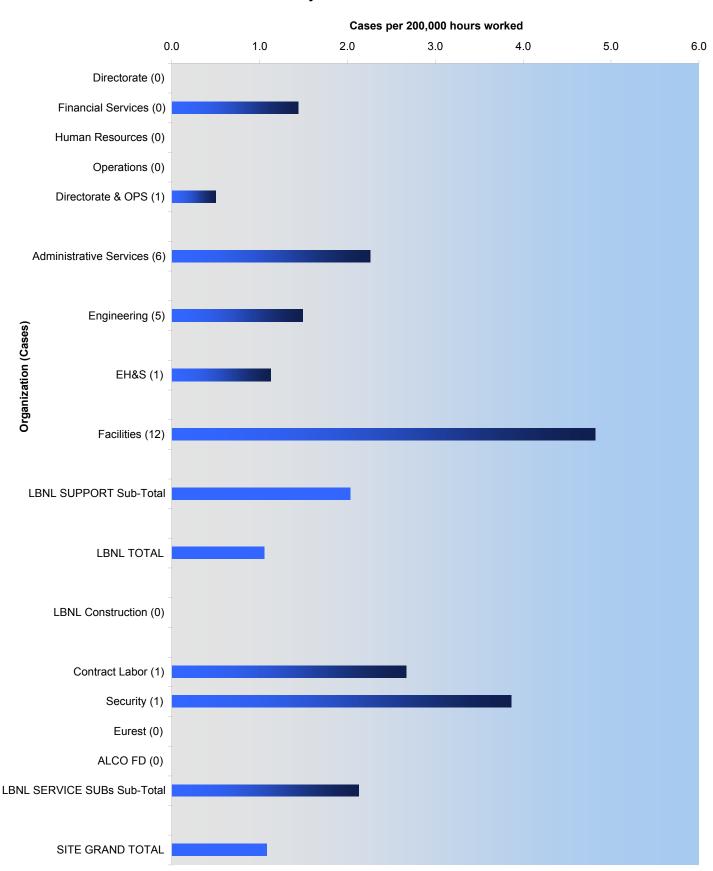
MJK, 7/14/2003

## Benson Reports - Total Recordable Case Rates (TRC)

July 2002 - June 2003 Cases per 200,000 hours worked 0.0 4.0 5.0 1.0 7.0 8.0 9.0



## Benson Reports - Days Away, Restricted of Transferred Cases (DART) July 2002 - June 2003



## **Additional Division Charts**

Annually, the EH&S Division prepares a detailed analysis of injuries for each division at the Laboratory. This analysis is usually available in August or September.

Additional analyses and charts for individual divisions are available through the respective EH&S Division Liaison